

IN 4.0

ADAPTATION OF INDUSTRY 4.0 MODEL TO THE NAVAL SECTOR

Virtual workshop minutes- WP6

“4.0 Connect and international best practices”

17 November 2020

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General information

Workshop details

- **Title:** IN 4.0 Connect and International Best Practices
- **Date:** 17 november 2020
- **Time:** 10:00h to 11:30 (CET)
- **General objective:** validating the results achieved through activity 6 of the IN 4.0 project " In marketing and costs " .
- **Platform:** Zoom Webinars

Framework

The “IN 4.0 Connect and International Best Practices” was celebrated in the framework of the [Business2Sea 2020](#), an international event dedicated to facilitating interaction among international professionals and organizations and to promote projects and businesses within the marine economy.

The current edition, running from the **16th to the 20th November 2020** was completely virtual, replacing the face-to-face edition that should have been held in Vigo on the same dates.



Programme 2020

Further details on the programme are available [here](#). Register [here](#).
Times are shown in Central European Time (CET).

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Virtual B2B Meetings 10:00-19:00				
Virtual Workshops 10:00-11:30 Workshop Project IN4.0 – IN4.0 Connect and International Best Practices 11:30-13:00 Final event KETmaritime project: Transfer of Key Enabling Technologies (KETs) to the Maritime Industries				
Virtual Conference 15:00-17:00 Research alliances in Ibero-America and their relevance for the international governance of marine ecosystems. Present and future of the INVIPESCA network				
Virtual Workshops 15:30-17:30 WestMED Initiative – Priorities for next years				

Workshop specific objectives

- Exploring and validating the achievements of the IN 4.0 Project related to cross-sector best practice exchange, analysing how the maritime sector can benefit from the transfer of knowledge and technology from other sectors to boost marketing strategies and to innovate in production processes. Evidence-based case examples will be presented.
- Disseminating the tool provided through the IN 4.0 Project: the [IN4.0 Connect Digital Platform](#), which is designed to connect companies in the traditional maritime sector with IN 4.0 digital technology specialists and to help companies establish business and research collaborations.

Workshop agenda



10th EDITION
16-20 NOVEMBER 2020
VIRTUAL EVENT

THE BLUE ECONOMY IN THE EU GREEN DEAL



17 NOVEMBER 2020
AT 10:00 AM

IN 4.0 CONNECT AND INTERNATIONAL BEST PRACTICES

Online format
Zoom



Register and connect with potential prospects and stakeholders

www.business2sea.org/registration-eng

10.15 "Cost savings and benefits of the adoption of industry 4.0 technologies for shipbuilding SMEs" and International best practices identified in other sectors"

Project results:

Conclusions on the report "Cost savings and benefits of the adoption of industry 4.0 technologies for shipbuilding SMEs"

- Christos Gkerekos, Phd., Knowledge Exchange Associate at the Faculty of Naval Architecture, Ocean and Marine Engineering (NAOME), University of Strathclyde

Best technology cases identified in sectors other than the maritime sector

- Pablo Fidalgo, Project Manager, Galician Association of Metal Industries and Associated Technologies (ASIME)

Best practices based on IN 4.0 technologies as a part of the marketing strategy:

Congalsa, Spain (Food Sector)

- Julio Simarro, Sales and Marketing Director

Best practices based on Innovative processes based on IN 4.0 technologies:

Institut de Recherche Technologique Jules Verne, France

- Olivier Preziosa, Technology Transfer Strategist

Automotive Technology Centre of Galicia (CTAG), Spain

- Ana Paul, Head of Technology Innovation



IN 4.0 WORKSHOP SPECIFIC OBJECTIVES

The aim of this workshop is to explore and validate the achievements of the IN 4.0 project regarding the exchange of cross-sectoral best practices. Examining:

- 1) The knowledge transfer to boost marketing strategies.
- 2) Business innovation production processes in shipbuilding companies will be disseminated.

Tool provided: IN4.0 Connect Digital Platform. The IN 4.0 Connect platform seeks to match-make firms from the traditional Maritime Sector with digital IN 4.0 Technology specialists and help firms make business and research connections. The main objective is to promote cross-sector collaborations, connections and increase company synergies. Evidence-based case examples will be presented.

Promoting collaborations on a global scale to enhance the competitiveness of the companies in the naval sector and improve the digitalisation of our industry sectors.

IN 4.0 WORKSHOP PROGRAM

10.00 Institutional welcome by the IN 4.0 Project Lead Partner
• María del Carmen Silva, President of Deputación de Pontevedra (DEPO)

10.05 The IN 4.0 Project and workshop contextualisation

10.55 Making the most of cross-sector connections: the IN 4.0 Connect platform

Project results:

The IN 4.0 Connect platform, advantages of cross-sector connections and clustering

- Jamie Meehan, Senior Researcher at the Department of Management & Enterprise, Cork Institute of Technology (CIT)

Experiences:

DARE Technology, Ireland (Cleantech sector)

- Darren Hayes and Patrick Grehan, partners and founders

11.15 Round of questions and conclusions

11.25 IN 4.0 Project upcoming activities for maritime companies

11.30 Closing

PROJECT PARTNERS



Summary minutes

10:00 | Institutional welcome by the IN 4.0 Project Lead Partner

Ana María Mejías Sacaluga, Councillor for New Technologies and Business Development at the Provincial Government of Pontevedra (DEPO) welcomed attendees to the workshop in representation of the IN 4.0 Project partnership, of which DEPO is the leading partner.

Ana María Mejías took the opportunity recall some of the main barriers that the IN 4.0 Project identified as the main obstacles that are delaying competitiveness of the European maritime industry, such as the expected shortage of qualified technical profiles in less than 15 years and the risk of destroying repetitive and low-skilled jobs, among others. She also explained how the IN 4.0 project envisages preventive mechanisms such as the identification of IN 4.0 technologies with potential to significantly enhance all stages of the value chain, particularly the production and marketing cycles, as well as the design of training programs to equip workers with the necessary technological skills, with a view to ensuring the European maritime industry remains competitive in the future.



10:05 | The IN 4.0 Project and workshop contextualisation

Benjamín López, EU Projects Officer the Provincial Government of Pontevedra (DEPO), greets the audience and thanks CETMAR and Fórum Oceano for the successful organisation of the first virtual edition of the congress Business2Sea, despite the difficulties and complications caused by the pandemic.

He introduces the IN 4.0 Project objectives and activities through the following [project video](#) and explains the objectives of the current virtual workshop "IN 4.0 Connect and International Best Practices", which seeks to validate the results and findings achieved through the activity dedicated to benchmarking cost-saving methods and new marketing strategies based on the application of new technologies in sectors other than the maritime one.

To this end, these are the main workshop discussion topics:

- Findings achieved through the report “**Cost savings and benefits of the adoption of industry 4.0 technologies for shipbuilding SMEs**”
- **Sharing best practices** identified in other sectors
- Presentation of the tool provided through the project to promote cooperation between maritime companies and digital IN 4.0 Technology specialists: the **IN 4.0 Connect platform**
- Analysing the advantages of business cooperation and clustering

10:15 | “Cost savings and benefits of the adoption of industry 4.0 technologies for shipbuilding SMEs and International best practices identified in other sectors”

- **Presenting the IN 4.0 project results**

Christos Gkerekos (University of Strathclyde) presents the main findings of the report “**Cost savings and benefits of the adoption of industry 4.0 technologies for shipbuilding SMEs**”, available for consultation in the IN 4.0 project website.

Christos Gkerekos explains that through this study, the project intended to outline a transnational methodology to make SME shipbuilders aware of the various options available to save costs, but more importantly to add value by adopting IN 4.0 technologies, as EU-based shipbuilders are always at disadvantage when it comes to cost, so they must compete on value, by generating additional data and generating adapted technologies as soon as new needs arise.

This study uses the automotive industry to evaluate and benchmark cost savings and value addition strategies that can be adapted to the shipbuilding industry, concluding that the 4.0 industry model is highly applicable to the shipbuilding industry, as it combines heavy steel construction work with the most advanced electronics to produce technologically complex products, for what **EU strategic common policies are necessary** to support firms in the deployment of adequate strategic plans that align with actual market needs, such as producing more energy efficient vessels.

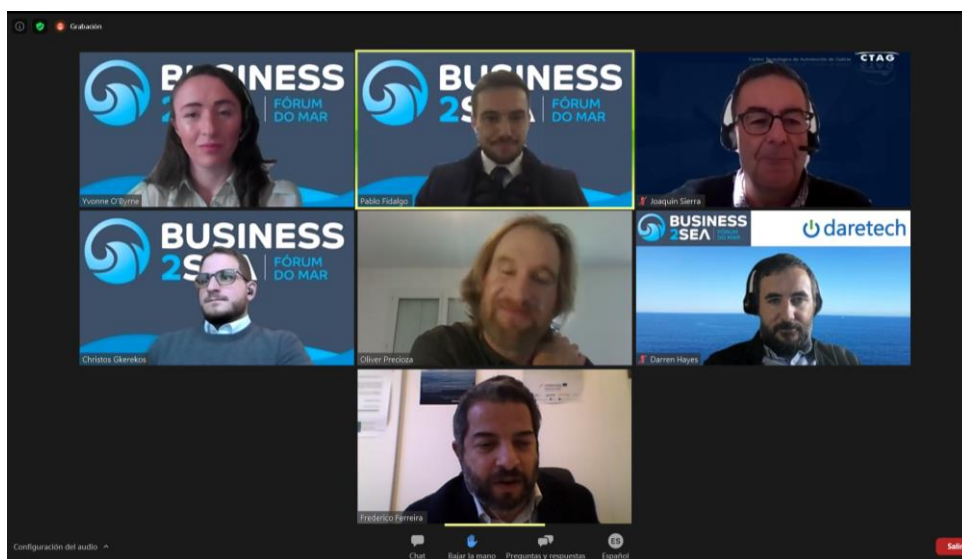
On the other hand, findings of this study show that although there is knowledge of the potential benefits of all the IN 4.0 capabilities, currently the monitoring and optimisation capabilities are starting to be utilised, whereas the autonomy capability appears to be underutilized due to the high cost attached to IN 4.0 enabling technologies. So, in order to unlock the benefits of IN 4.0, SMEs in the shipbuilding industry should consider starting by what constitutes an acceptable risk for the firm to an understanding of appropriate technologies to be implemented throughout to develop a bespoke solution for the company.

Besides, companies should consider implementing **cloud computing technologies** that allow the development of a unified data platform designed to integrate data from different departments in the shipbuilder's organisation and other participants in the value chain, which is able to ingest various types of datasets, enabling the creation of value-added applications. SMEs are the major category that can benefit from cloud services due its low cost and pay-as-you-go format.

Additionally, **companies are advised to liaise with technology developers**, as they are commoditising IN 4.0 solutions more and more, making them more affordable. This includes much of the networking connectivity that is required. Some of the solutions even come with standard interfaces based on best practices that help to streamline some of the technical requirements for tying the various layers together. With cloud computing in place, additional IN 4.0 technologies can be added as a shipyard links the various design, building and operational activities together to deliver on the enhanced value propositions with regard to the complex functionality of maritime transportation.

Pablo Fidalgo (ASIME) presented the results of the two activities dedicated to **benchmarking and identification of best technological practices with potential for adaptation to the shipbuilding industry in two main areas: marketing and manufacturing**. But before getting into further details, Pablo Fidalgo recalled the results achieved through the project during the previous activity (WP4), in which five key technologies were identified as those with the greatest potential for fostering innovation in the shipbuilding and repair industry in the coming years. These technologies are:

- **Monitoring**, focused on traceability and industrial information systems. Specially relevant during the construction of a vessel, where traceability technologies such as RFID or barcodes play a key role in terms of quality and cost control in real time.
- **Automation/Robotics**. Automation/Robotics. The naval industry is labour extensive so it is important to achieve a higher degree of automation of certain processes. On the other hand, shipbuilding industry produces unique products that cannot be manufactured in series.
- **Collaborative platforms**. Many suppliers are involved in the manufacture of a vessel, which requires comprehensive traceability of all operations. The use of collaborative platforms would allow a smooth cooperation between suppliers and customers, and hence, proper management of each project.
- **Augmented reality**. This technology is, and will be, of great importance, especially in terms of marketing. On the one hand, it allows better sales of the product, but it also allows selling an integral service (servising). And on the other hand, taking into account the average age of the workers in the shipbuilding industry, the RA would increase the possibilities of knowledge transfer from the most experienced workers to the newcomers.



Considering these technologies, 10 best practices cases (5 in marketing and 5 in manufacturing) were selected and analysed in other sectors, such as the food, automotive, or textile industries, trying to value the adaptability of this know-how to the shipbuilding industry.

To give the discussion a practical approach, Pablo Fidalgo introduces **Julio Simarro, Sales Manager of Congalsa**, who will present the steps followed by this firm in order to improve their marketing strategy through technology, as well as **Joaquín Sierra, Head of Singular Projects at CTAG** (Automotive Technology Centre of Galicia) and **Oliver Preziosa Technology Transfer Strategist at IRT Jules Verne**, who will speak about technologies to support the manufacturing process. The three representatives will refer to the experiences and technologies adopted by their firms in order to innovate.

Pablo Fidalgo closes the introduction to the project's results by highlighting the importance of cross-sector cooperation for the shipbuilding and ship repair industry.

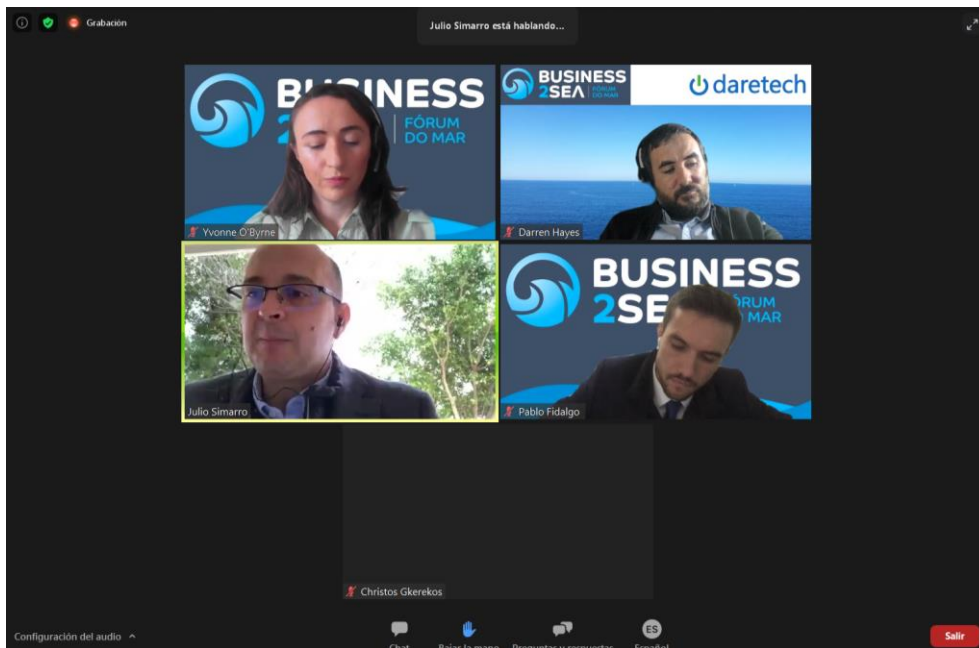
- **Best practices based on IN 4.0 technologies as a part of the marketing strategy:**
[Congalsa](#) (food sector)

Julio Simarro, Sales and Marketing Director of Congalsa, explains the main characteristics of this leading firm in the processed fish distribution sector. Congalsa was founded by his father more than 30 years ago, and currently employs more than 400 workers in two production centres, one in Galicia and one in Portugal, and exports to more than 35 countries.

Julio Simarro explains that the success of Congalsa has historically relied in the capability to add value to their fish products, but also in the strategic decision of innovating in their marketing strategies, by investing in “selling better” and more efficiently. This investment consisted in providing both their salespeople and clients with state-of-the-art tools based on technologies such as AR (augmented reality), what allowed the positioning of Congalsa in the top-of-mind of their clients, mainly wholesalers and professional cooks in the hospitality industry.

Resources and time were dedicated to produce high quality videos and images of Congalsa's products, packaging and raw materials so clients have as much information as possible to make better and instant decisions when choosing supplies.

Now that the marketing strategy is smoothly evolving, Congalsa is planning new investments in technologies adapted to the company’s sales structure, aiming at managing vendors and making the most of accumulated market data in order to anticipate to their clients’ needs depending on their behaviour (what they need, when, how, where...)



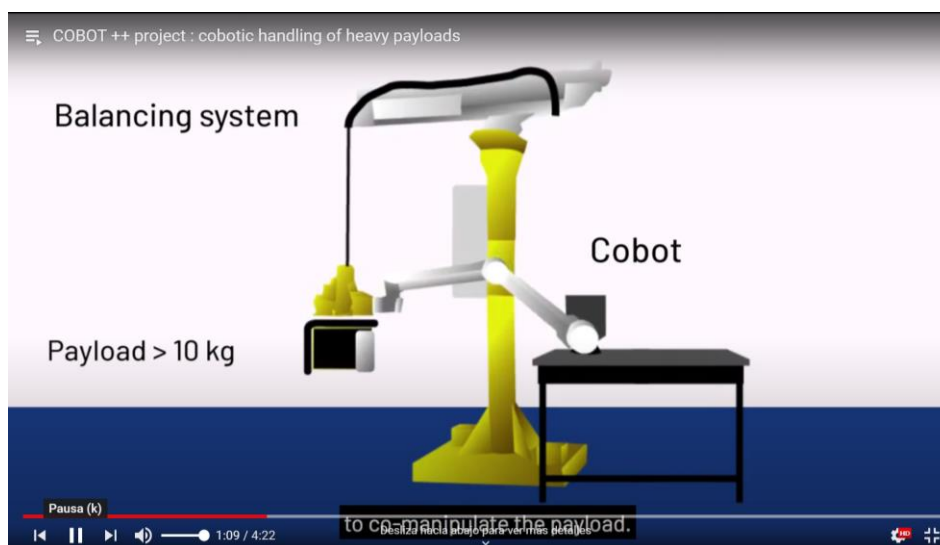
When asked by Pablo Fidalgo about how Congalsa had managed change in order to introduce the mentioned innovations, Julio Simarro explained that the key to success was a collaborative approach based on making their workers an active part of the change, so they understood that they were not going to be replaced by technology but that change was necessary and that technology based tools were there to help them, for what workers were counselled and trained to use the new tools within the company

Christos Gkerekos asked Julio Simarro about the process that Congalsa had followed to choose their new B2B marketing tools, to which Julio responded that there is a great variety of technologies in the market, however what Congalsa did was to focus on understanding what the needs of their clients were, and prioritise them over Congalsa's needs. In his opinion, new technologies must be carefully selected to serve both the customer and the company, and that is his recommendation to any maritime SME.

- **Best practices based on IN 4.0 technologies as a part of the production process:**
 - [ITR Jules Verne](#) (cobot case at Saunier Duval)
 - [CTAG](#) (Automotive Technology Centre of Galicia)

Olivier Preziosa introduced the organisation where he and **Guy Caverot** are Technology Transfer Strategists. The Institute of Technology Research Jules Verne, based in Nantes, employs 130 researchers and technicians and produces an annual turnover of 26M, having carried out more than 100 R&D projects since it was founded in 2012. IRT Jules Verne is structured into 5 research teams, and the case to be exposed today was developed by the **Robotics & Cobotics research team**, of which Olivier Preziosa and Guy Caverot are members.

The case focuses on how the Robotics & Cobotics team provided **Saunier Duval**, the international boilers' manufacturing firm, with a solution to handle heavy loads (of more than 30 kg) in collaboration with operators along the manufacturing chain. IRT Jules Verne combined the use-case provided by Saunier Duval with other two similar use-cases (Airbus and Chantiers de l'Atlantique) in order to make the new solution more profitable and scalable, resulting in the Cobot++, that interacts with the balancing system to co-manipulate the payload.

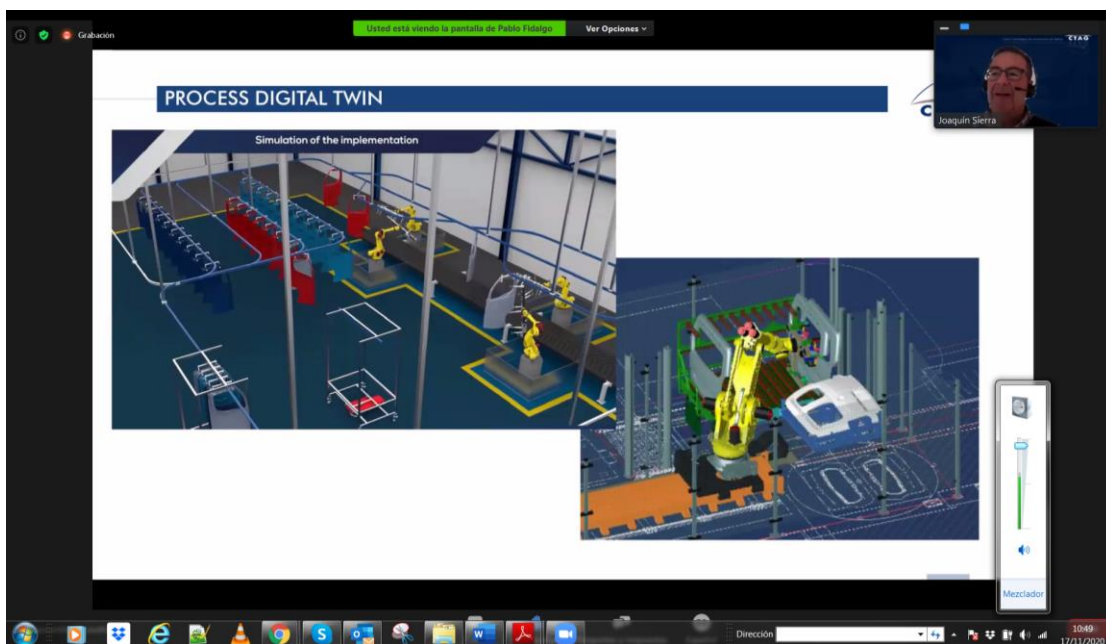


IRT Jules Verne is now in the process of making the most of the IP and know-how developed through this experience at Saunier Duval, and in line with the objective of making technology

affordable to all sorts of companies and industries, is nowadays is building other products inspired by Cobot ++, targeted at manipulating more than 100 kg and that are expected to be ready for transfer to any industry by 2021.

Olivier Preziosa showed [a video on the case](#) and future expectations.

Joaquín Sierra, Head of Innovation at CTAG (Automotive Technology Centre of Galicia), supported the arguments exposed by Olivier Preziosa and briefly described the advantages of some of the technologies that meant a change for the automotive industry, and that in his opinion are adaptable to shipbuilding, taking into account the size of designs and the weight of the enormous pieces that operators have to handle. Some of these technologies are **digital twins, industrial collaborative robots and exoskeletons**, that supposed a significant reduction of musculoskeletal diseases of workers.



When Pablo Fidalgo asks how technologies based on digital twins could help the shipbuilding industry, where unlike the automotive industry, serial manufacturing does not exist, Joaquín Sierra referred to digital twins as a tool that could bring about a cultural change in shipbuilding, facilitating a progressive and smooth transition to the 4.0 industry model, always taking into account that firms must plan this transition, making workers familiar with 4.0 technologies, so that they understand that they will not be substituted by these new tools.

Pablo Fidalgo addressed a second question to Olivier Preziosa and Joaquín Sierra, regarding cobots as a tool to prevent occupational health risks and to improve workers' safety, and whether they considered that cobots would be adaptable and profitable for shipbuilding companies. Both Oliver and Joaquin coincide in pointing out the implementation of cobots and other tools as an unavoidable process that will continue for decades. Cobots facilitate operators' tasks, but also make the whole process smoother, what brings a **positive impact on the quality of the product, as well as on the price**. However, exoskeletons may not be so popular because of their invasiveness to the operator. In any case, both Olivier and Joaquin think that **the future is not robotic, but rather cobotic**.

10:15 | The IN 4.0 Connect platform, advantages of cross-sector connections and clustering

Yvonne O'Byrne who is a senior researcher at the V-link group of the Cork Institute of Technology (CIT), explains the audience how the V-link Team specialised in clustering and economic research uses specially designed software to map, analyse and evaluate current and potential links and relationships between different actors within economic ecosystems and value chains. To this end, the V-link team has designed the [IN 4.0 Connect](#) platform in order to promote connections between companies in the traditional maritime sector and IN 4.0 digital technology specialists, so they can establish business and research collaborations.



She plays a video explaining the case of one of the companies showcased in the IN 4.0 Connect platform: UtilityAR, and Irish firm specialised in AR (artificial reality) that can produce

solutions tailored to the needs of maritime companies and invites any interested company to join the platform and make the most of peer-to-peer and cross-sector collaborations.

Yvonne O’Byrne is accompanied by **Darren Hayes, co-founder of Dare Technologies**, another Irish firm located at the Entrepreneur Centre in Cork, specialised in providing the solutions focused on climate action and blue economy. He explains how the IN 4.0 Connect platform gave them access to 143 companies, and how being such a small company, that means a great advantage to them.



Darren Hayes continued describing how Dare Tech focuses in reducing the use of fuel by vessels in order to mitigate GHG emissions by providing alternative solutions to diesel generators, for what they created an hybrid generator that allows maximizing the productivity of the diesel generator to charge the batteries, and then the generator switches off. Some of the advantages of these hybrid generators are that they require less maintenance, and hence, less operating costs. The system is scalable and allows data storage and exploitation.



	Diesel Generator	Shore Power	Other Renewables	Hybrid
Technology Maturity	✓	✓	✗	✓
CAPEX	€	€€€	€€€	€€
OPEX	€€	€€	€	€
Adaptability for different power systems	✗	✗	✗	✓
Maintenance Intervals	✗	✓	✗	✓
Regulation	✗✗	✓	✓	✓
Power Certainty	✓	✓	✗	✓

Competitive Advantage (highlighted for Hybrid technology)

11:15 | Conclusions

Some of the main conclusions discussed during the current workshop are:

- EU-based shipbuilders are always at disadvantage when it comes to cost, so they must compete on value, by generating additional data and generating adapted technologies as soon as new needs arise.
- Cooperation with policy makers and main maritime industry stakeholders is an urgent need in order to develop a maritime transnational strategy
- New marketing strategies based on 4.0 technologies can make the difference, however, each firm must carefully select the tools not only according to own needs, but to their clients' needs.
- Some the technologies with the greatest potential for manufacturing processes in the maritime industry are cloud computing, AR, VR and cobots, among other tools
- Maritime companies must develop individual change management strategies aimed at making workers an active part of the new paradigm

11:25 | IN 4.0 upcoming activities and closing

Frederico Ferreira, Project officer at Forum Oceano, who has conducted the workshop by introducing speakers and the discussion topics, thanks the audience for participating in this validation event and reminds them to follow up on the project's upcoming activities, such as

the “transnational training and internships program” addressed to maritime companies in the five country members of the Atlantic Area Programme, starting from January 2021 on.

